REMARKS/ARGUMENTS

Claims 1-3, 6-13, 15, 18-19, and 22 are pending, of which claim 12 has been withdrawn. Claims 16, 17, 20, and 21 have been canceled without prejudice and without disclaimer. Claims 1, 13, 18, and 22 have been amended. No new matter has been introduced. Applicants believe the claims comply with 35 U.S.C. § 112.

Independent claim 1 has been amended by adding the features of original claims 16 and 17. Independent claim 13 has been amended by adding the features of original claims 20 and 21. Because those dependent claims were presented for examination in the previous amendment, Applicants respectfully submit that the present amendment of claims 1 and 13 *does not introduce any new issues*. Entry of this amendment after final is respectfully requested.

Claims 1, 2, 13, 18, and 22

Claims 1, 2, 13, 18, and 22 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Narumi et al. (US 6,563,667 B2) in view of Cates (US 6,788,497 B1).

Applicants respectfully submit that independent claims 1 and 13 as amended are patentable over Narumi et al. and Cates because, for instance, they do not teach or suggest that the coefficient of thermal expansion of the first layer is larger than the coefficient of thermal expansion of the second layer; and that the first layer is formed between the second layer and the read element.

The Examiner asserts that Narumi et al. discloses these features, but does not point to any specific part of the disclosure for the assertion. Narumi et al. does disclose lower and upper magnetic shields 12, 13 including a first magnetic layer 122, 132 made of a first material having a first electric resistivity, and a second magnetic layer 121, 131 made of a second material having a second electric resistivity higher than the first resistivity. (The second magnetic layer is closer to the magnetoresistive effect element 15 than the first magnetic layer.) According to the specification, the first material is 46Ni-Fe and the second material is Fe-Ni-O. High resistance magnetic shields are used to restrict the amount of the

sensing current, and to prevent the degradation of the withstand voltage and insulation break-down in the magnetoresistive effect type element.

Narumi et al. does not, however, disclose the relations between the coefficients of thermal expansion of the first and second layers.

In the present invention, a first layer having a larger coefficient of thermal expansion as compared to a second layer is formed between the second layer and the read element. This achieves the balance between high magnetic property (from high coefficient of thermal expansion of the layer near the read element) and low thermal protrusion (from low coefficient of thermal expansion of the layer far from the read element), which is different from Narumi et al.

Narumi et al. does not inherently disclose the claimed feature. Oxides generally reduce the coefficient of thermal expansion, so that the thermal expansion coefficient relation between the two layers in Narumi et al. is *opposite* from the relation as claimed in the present invention, since the second layer (closer to the magnetoresistive effect element 15) has a *lower* coefficient of thermal expansion than the first layer.

Thus, Narumi et al. fails to teach or suggest the thermal expansion coefficient relation as claimed. Cates is merely cited for allegedly disclosing a separated nonmagnetic layer to separate the read unit and the write unit, and does not cure the deficiencies of Narumi et al.

For at least the foregoing reasons, claims 1 and 13, and claims 2, 18, and 22 depending therefrom, are patentable over Narumi et al. and Cates.

Claims 3 and 6-11

Claims 3 and 6-11 depend from claim 1, and stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Narumi et al. and Cates, and further in view of Pust et al. (US 2003/0081359 A1).

The Examiner cites Pust et al. for allegedly disclosing some of the features recited in dependent claims 3 and 6-11, such as a NiFe alloy layer having a composition comprising 30-55 wt% Ni, and a NiFe alloy layer having a composition mainly comprising

80 wt% Ni. Pust et al. does not, however, cure the deficiencies of Narumi et al. and Cates, in that Pust et al. also fails to teach or suggest that the coefficient of thermal expansion of the first layer is larger than the coefficient of thermal expansion of the second layer; and that the first layer is formed between the second layer and the read element, as recited in claim 1 from which claims 3 and 6-11 depend.

Therefore, claims 3 and 6-11 are patentable as being directed to additional features of the invention as well as by being dependent from allowable claim 1.

Claims 15 and 19

Claims 15 and 19 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Narumi et al. and Cates, and further in view of Kief et al. (US 6,788,497 B1).

The Examiner cites Kief et al. for allegedly disclosing that the coefficient of thermal expansion of said second layer is 11.5 x 10^{-6}/K or less. Kief et al., however, does not cure the deficiencies of Narumi et al. and Cates, in that Kief et al. also fails to teach or suggest that the coefficient of thermal expansion of the first layer is larger than the coefficient of thermal expansion of the second layer; and that the first layer is formed between the second layer and the read element, as recited in claims 1 and 13 from which claims 15 and 19 depend, respectively.

Accordingly, claims 15 and 19 are patentable as being directed to additional features of the invention as well as by being dependent from allowable claims 1 and 13.

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance and an action to that end is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 650-326-2400.

Respectfully submitted,

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